

Multiplying Vectors

Eg $5 \begin{pmatrix} 4 \\ 3 \end{pmatrix} = \begin{pmatrix} 20 \\ 15 \end{pmatrix}$

Scalar multiples

$$\underline{a} \times \underline{b} = \underline{c}$$

Vector product
Cross product
- Not covered.

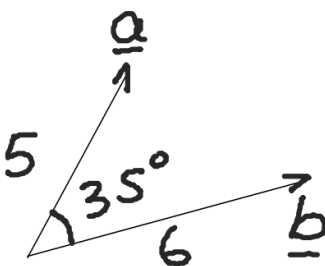
$$\underline{a} \cdot \underline{b} = c$$

Defined as

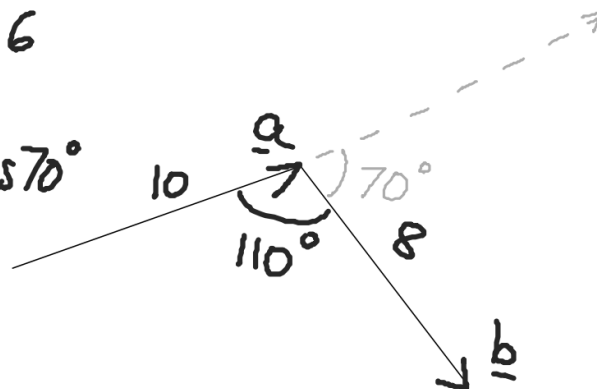
Scalar product
Dot product

$$\underline{a} \cdot \underline{b} = |\underline{a}| |\underline{b}| \cos \Theta$$

Example


$$\begin{aligned}\underline{a} \cdot \underline{b} &= 5 \times 6 \times \cos 35^\circ \\ &= 30 \cos 35^\circ \\ &= 24.6\end{aligned}$$

$$\begin{aligned}\underline{a} \cdot \underline{b} &= 10 \times 8 \cos 70^\circ \\ &= 27.4\end{aligned}$$



$$\underline{a} \cdot \underline{b} = |a| |b| \cos \Theta$$

$$\underline{b} \cdot \underline{a} = |b| |a| \cos \Theta$$

$$\therefore \underline{a} \cdot \underline{b} = \underline{b} \cdot \underline{a}$$

Refer notes on Wikispaces.

Exercise 8B